

## CLAIMS

What is claimed is:

1 <sup>sub</sup> A method for allowing multiple types of clients to use a database application without  
2 <sup>B3</sup> hard-coding presentation logic for each of the multiple types of clients into the  
3 database application, the method comprising the steps of:  
4 prior to providing data from the database application to a particular client, performing  
5 the steps of:  
6 converting the data that is to be transmitted from the database application to  
7 the particular client into an XML output without regard to the device  
8 type of the particular client; and  
9 identifying the client device type of the particular client;  
10 reading metadata that indicates how to convert said XML output to output for  
11 said client device type; and  
12 based on said metadata, converting the XML output to output for said client  
13 device type; and  
14 providing the output for said client device type to said particular client.

1 2. The method of Claim 1 wherein:  
2 the step of reading metadata includes reading an XSL style sheet associated with said  
3 client device type; and  
4 the step of converting the XML output includes applying the XSL style sheet to said  
5 XML output.

1     3.     The method of Claim 1 wherein the step of converting the data that is to be  
2     transmitted from the database application to the particular client into an XML output  
3     includes converting the data based on one or more data type definition files.

1     4.     The method of Claim 1 wherein:  
2             the particular client is a Telnet client;  
3             the Telnet client communicates with a Telnet server to request data from said database  
4                   application; and  
5             the step of providing said output to said particular client includes the steps of  
6                   sending the output to said Telnet server; and  
7                   said Telnet server providing said output to said Telnet client.

1     5.     The method of Claim 1 wherein the step of converting the data that is to be  
2           transmitted from the database application includes the steps of:  
3           identifying a data type to which the data corresponds;  
4           identifying a data type definition associated with said data type; and  
5           converting the data to XML output based on said data type definition.

1     6.     The method of Claim 1 wherein the XML output includes display instruction data  
2     indicating that said data is to be displayed in a first manner.

1 7. The method of Claim 6 wherein the step of converting the XML output includes the  
2 step of generating output for said client device type that causes said data to be

displayed in a second manner that is different than said first manner when said client device type is not able to display said data in the first manner.

8. A method for using a database application with clients that support multiple mark-up language interpreters without hard-coding into the database application logic to support each of the multiple mark-up language interpreters, the method comprising the steps of:
- converting output of the database application to first data that conforms to a first mark-up language without regard to the type of mark-up language interpreter supported by a client to which the output is to be sent;
  - selecting, based on the type of mark-up language interpreter supported by the client to which the output is to be sent, a second mark-up language that is different than said first mark-up language;
  - converting the first data to second data that conforms to the second mark-up language;
  - and
  - sending the second data to the client.

9. The method of Claim 8 wherein the step of converting the first data to second data is performed by applying an XSL style sheet to said first data.

10. The method of Claim 8 wherein the step of sending the second data to the client includes sending the data to a server to which the client is connected through a wireless connection, and then sending the data from the server to the client over said wireless connection.

1 11. The method of Claim 8 wherein the step of converting output of the database  
2 application to first data includes:  
3 identifying a data type associated with said output;  
4 identifying a data type definition file associated with said data type; and  
5 converting said output to said first data based on rules specified in said data type  
6 definition file.

1 12. A system comprising:  
2 a database system;  
3 a database application operatively coupled to said database system;  
4 said database application including:  
5 application logic that retrieves data from said database system and uses said  
6 data to produce a first output in a format that is not dictated by what  
7 type of client is to receive the output;  
8 an XML processor that formats the first output into XML to produce second  
9 output that is not dictated by what type of client is to receive the  
10 output; and  
11 an XSL processor that converts the second output into a third output based on  
12 an XSL style sheet associated with the type of client that is to receive  
13 the output.

1 13. The system of Claim 12 further comprising:  
2 a plurality of servers operatively coupled to said database application;

said plurality of servers including at least a first server configured to provide services to clients that support a first protocol and a second server configured to provide services to clients that support a second protocol that is different from said first protocol; and

a plurality of clients including a first client that interacts with said database application through said first server and a second client that interacts with said database application through said second server.

14. A computer-readable medium carrying instructions for allowing multiple types of clients to use a database application without hard-coding presentation logic for each of the multiple types of clients into the database application, the instructions including instructions for performing the steps of:
- prior to providing data from the database application to a particular client, performing the steps of:
- converting the data that is to be transmitted from the database application to the particular client into an XML output without regard to the device type of the particular client; and
- identifying the client device type of the particular client;
- reading metadata that indicates how to convert said XML output to output for said client device type; and
- based on said metadata, converting the XML output to output for said client device type; and
- providing the output for said client device type to said particular client.

- 1 15. The computer-readable medium of Claim 14 wherein:  
2 the step of reading metadata includes reading an XSL style sheet associated with said  
3 client device type; and  
4 the step of converting the XML output includes applying the XSL style sheet to said  
5 XML output.
- 1 16. The computer-readable medium of Claim 14 wherein the step of converting the data  
2 that is to be transmitted from the database application to the particular client into an  
3 XML output includes converting the data based on one or more data type definition  
4 files.
- 1 17. The computer-readable medium of Claim 14 wherein:  
2 the particular client is a Telnet client;  
3 the Telnet client communicates with a Telnet server to request data from said database  
4 application; and  
5 the step of providing said output to said particular client includes the steps of  
6 sending the output to said Telnet server; and  
7 said Telnet server providing said output to said Telnet client.
- 1 18. The computer-readable medium of Claim 14 wherein the step of converting the data  
2 that is to be transmitted from the database application includes the steps of:  
3 identifying a data type to which the data corresponds;  
4 identifying a data type definition associated with said data type; and

5 converting the data to XML output based on said data type definition.

1 19. The computer-readable medium of Claim 14 wherein the XML output includes  
2 display instruction data indicating that said data is to be displayed in a first manner.

1 20. The computer-readable medium of Claim 19 wherein the step of converting the XML  
2 output includes the step of generating output for said client device type that causes  
3 said data to be displayed in a second manner that is different than said first manner  
4 when said client device type is not able to display said data in the first manner.

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